

Information about Connecticut River Shortnose Sturgeon (CRSNS) ***Acipenser brevirostrum***

Life history and effects of damming and river regulation

- * Sturgeons are ancient fish that coexisted with dinosaurs 60+ million years ago. CRSNS have a complex life history (see published papers by Kynard, et al.). **The species is the only federally endangered fish in MA.** CRSNS is the second smallest population of the species known.
- * CRSNS was studied for 28 years by B. Kynard, his UMass students, and federal Conte Lab staff.
- * Population is not "landlocked" upstream of Holyoke Dam, but instead, ranges from Turners Falls to the estuary in Connecticut.
- * The one population was segmented in 1849 by Holyoke Dam, so today, an estimated 325 adults are upstream of the dam and spawn at Montague, and 1500 adults are downstream of the dam, reproductive nulls because only a rare female spawns at Holyoke.
- * Even after 150+ years of damming, adults and juveniles continue to migrate seasonally up- and downstream among the 3-river foraging-wintering reaches (Deerfield, MA, Agawam, MA, and in Connecticut) until upstream migrations are blocked by Holyoke Dam.
- * **The one historical spawning reach is at Montague, MA, in the bypass reach downstream from Turners Falls Dam (so only the 325 upstream segment adults have access to the historical spawning site (effective population size = 325).**
- * **A population of 300 adults has zero chance of long-term survival; The population segments must be reconnected by fish passage.**
- * Holyoke Dam also kills adults and juveniles from the upstream segment that migrate downstream to Agawam or Connecticut.
- * CRSNS require upstream and downstream passage at Holyoke Dam, as specified in the federal relicensing of Hadley Falls Station at Holyoke Dam in 2004.
- * Downstream passage facilities to solve the problems for downstream migrant CRSNS were finally being installed in 2015.

A 320 page, 12 chapter book reviewing 17 years of research on CRSNS was published in 2012 by the World Sturgeon Conservation Society in Germany. This book reviews CRSNS life history, including info used in the *federal* relicensing of hydroelectric stations at Holyoke Dam (early 2000s) and Turners Falls Dam (present day). The book is available from the WSCS (in

the USA or Canada, contact, Boyd Kynard
at bkriverfishllc@gmail.com.

River Regulation & Connecticut River Shortnose Sturgeon (CRSNS) Turners Falls Dam & Sturgeon Spawning

- * Turners Falls Dam at Turners Falls, MA, dams the Connecticut River and can divert river water into the **Bypass Reach (natural channel downstream of the dam)** or into the industrial canal that leads to Cabot Hydroelectric Station at the downstream end of the canal.
- * **Rock Dam, a natural dam at the downstream end of the Bypass Reach, is the historical spawning site of Connecticut River Shortnose Sturgeon (CRSNS), the only federally Endangered Species of fish in the river.**
- * During our 17 years of study, CRSNS spawning failed 11 years at Rock Dam and failure during 5 years was clearly due to low flows (<2400 cfs) released by Turners Falls Dam into the Bypass Reach.
- * Unfortunately for spawning CRSNS, the change from natural river flows to regulated flows controlled by Turners Falls Dam **occurs annually at about the time females gather to spawn at Rock Dam and the low regulated flows result in a slower bottom velocity than pre-spawning females require, so they leave Rock Dam.**
- * Females leave Rock Dam and swim downstream to the Tailrace of Cabot Station, which is the only place in this river reach with bottom current velocity suitable for spawning. Females attempt to spawn in the tailrace.
- * However, the tailrace has un-natural flows that can change drastically in a few minutes; a condition caused by the on and off generation of Cabot Station hydroelectric turbines. **This operation can stop females from spawning (when velocity is too high), and also, the fast-generation-flows flush spawned eggs and free embryos out of the tailrace, causing mass mortality.**
- * Further, water released by Northfield Mt. Pump Storage Plant upstream of Turners Falls Dam can be in excess for the Cabot Canal capacity and, if spilled into the river at the Cabot Station Tailrace through spill gates, the spill scours or buries CRSNS eggs and free-embryos spawned in the tailrace.
- * Many years of research found successful spawning and rearing of early life stages of CRSNS in the highly disturbed habitat of the Cabot Station Tailrace is fraught with problems caused by operation of the turbines and spillage of excess water from the canal.

* If conservation of the Endangered CRSNS is a priority, this regulated river should be managed so that spawning and rearing of CRSNS can occur at their natural spawning site: Rock Dam. However, for this to occur, river flow must be returned to the Bypass Reach (ending segmentation of the river), and the river made whole again for all its creatures.

HOW YOU CAN HELP:

Presently, Cabot Station is in the relicensing process by FERC (Federal Energy Regulatory Commission) and fisheries agencies are requesting increased river flow in the Bypass Reach to restore river flows at Rock Dam during sturgeon spawning and rearing. However, no improvement or protection for sturgeon spawning and rearing is for sure. A semi-natural flow that ends the river segmentation in the Bypass Reach should be the goal for all river fisheries as it is at most hydroelectric facilities in the USA.

Our 17 years of research found a **sustained** minimum of 2400 cfs (the measure of the volume of water passing per cubic feet per second) was needed for CRSNS spawning at Rock Dam. To merely preserve sturgeon spawning and rearing habitat, **we recommend 3000 cfs be released by Turners Falls Dam into the Bypass Reach from 15 April to 15 June each year.**

The public has had little input to FERC about the **relicensing, which will set the flow conditions in the Bypass Reach and protection for CRSNS spawning and rearing at Rock Dam for the next 30-40 years.** Letters to support additional Bypass Reach flows for CRSNS spawning-rearing and to control spillage from the Cabot Canal on the spawning site in the Cabot Station Tailrace can be sent to the following:

Kimberly Bose, Secretary, Federal Energy Regulatory Commission, 888 First St., N. E., Room 1A, Washington, DC 20426

Or to www.ferc.gov and click on "File E-comment" then use project # (note: comments must refer to project # (P-2485 and P-1889) in the subject line or they will not be read.